



INTEGRATED CIRCUIT

The AWM1306 is a monolithic linear integrated circuit with principal applications in the narrow-band FM receivers where low power dissipation is important.

This integrated circuit consists of a high gain 1 MHz amplifier-limiter and a quadrature FM discriminator. Supply voltages are internally regulated to allow for a large range of external supplies and the input impedance is set for matching typical ceramic filters.

Complementary outputs from the discriminator provide for simple DC alignment and the required external bypassing is not critical.

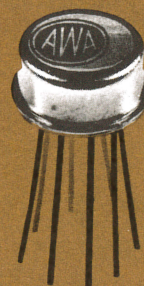
This unit is recommended for use with the AWM1272 oscillator-mixer.

GENERAL CHARACTERISTICS

Package	12 lead T0-5
Maximum Storage Temperature	150°C
Operating Temperature Range	0 to 70°C
Supply Voltage Range	4.5 to 12 volts
Typical Power Dissipation	12 milliwatts
Typical R.F. Gain	90 dB
R.F. Bandwidth (-3dB)	1 MHz
Typical Input Impedance	1.2 Kilohms
Maximum Recovered Audio	200 millivolts

AWM 1306

LOW POWER F.M. I.F. AMPLIFIER- DEMODULATOR



12 lead T05 Package
Details on page 4.

APPLICATIONS

- Mobile telephones.
- F.M. Receivers.
- Radio control systems.
- Amateur Radio.

FEATURES

- Low power consumption.
- Non-critical bypassing.
- Dual grounds for improved stability.
- Access to limiter output.
- Complementary output signals simplifies alignment.
- For use with AWM1272 oscillator-mixer.
- Bandwidth determined by external components

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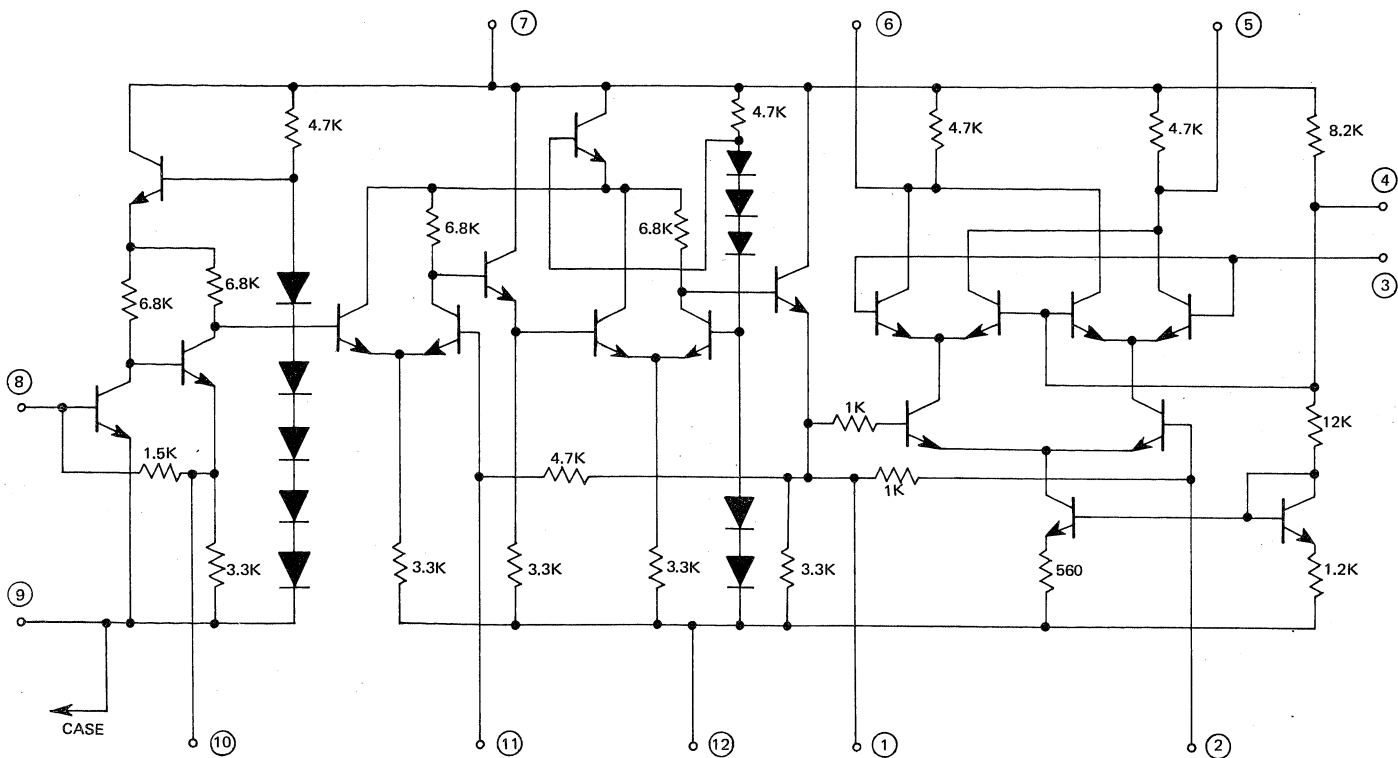
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Supersedes Issue 2-71

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STATIC AND DYNAMIC ELECTRICAL CHARACTERISTICS



The resistance values shown in the circuit are nominal only.

Figure 1. AWM 1306 Schematic circuit diagram.

PIN	FUNCTION	PARAMETER (TA = 25°C)	CONDITIONS	VALUE			UNITS
				Min.	Typ.	Max.	
1	RF out	DC level Gain ¹ (small sig)	Vcc = 6V f = 455kHz f = 2MHz	1.35 80 72	1.4 90 80	1.55 100	V dB dB
2	Base bypass 2	DC level	Vcc = 6V	1.35	1.4	1.55	V
3	Discriminator input	See Note 2					
4	Divider bypass	DC level	Vcc = 6V	3.7	3.9	4.2	V
5	Audio out (+)	DC level Signal out	Vcc = 6V See Note (1)	4.6 100	5.0 130	5.3	V mV
6	Audio out (-)	DC level	See (5)	4.6	5.0	5.3	
7	Positive supply	Supply range	Vcc = 12V Vcc = 6V	4 3.8 1.8	6 4.5 2.2	12 5.0 2.7	V mA mA
8	RF input	DC level Noise figure ³	Vcc = 6V Rs = 50 ohm	0.6	0.7 10	0.8 13	V dB
9	Low level ground (connected to case)	See Note 4					
10	Emitter bypass	DC level	Vcc = 6V	0.6	0.7	0.8	V
11	Base bypass 1	DC level	Vcc = 6V	1.35	1.4	1.55	
12	High level ground						

- Notes
1. See Fig. 2 for measurement circuit.
 2. Pin 3 should be returned to (4) through a low dc resistance (e.g. inductor).
 3. Output noise at pin 1 for Rs = 50 ohm (zero signal) is 200mV max; 100mV typ.
 4. The low-level ground should be returned to a common ground point on the circuit board.

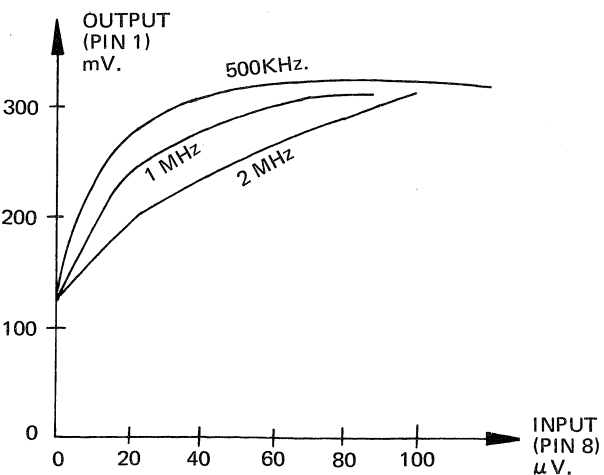


Figure 2. Limiting Characteristic as Function of Frequency.

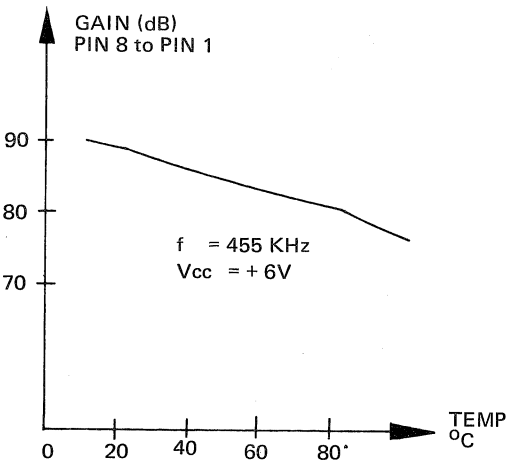


Figure 3. Gain-Temperature Characteristic.

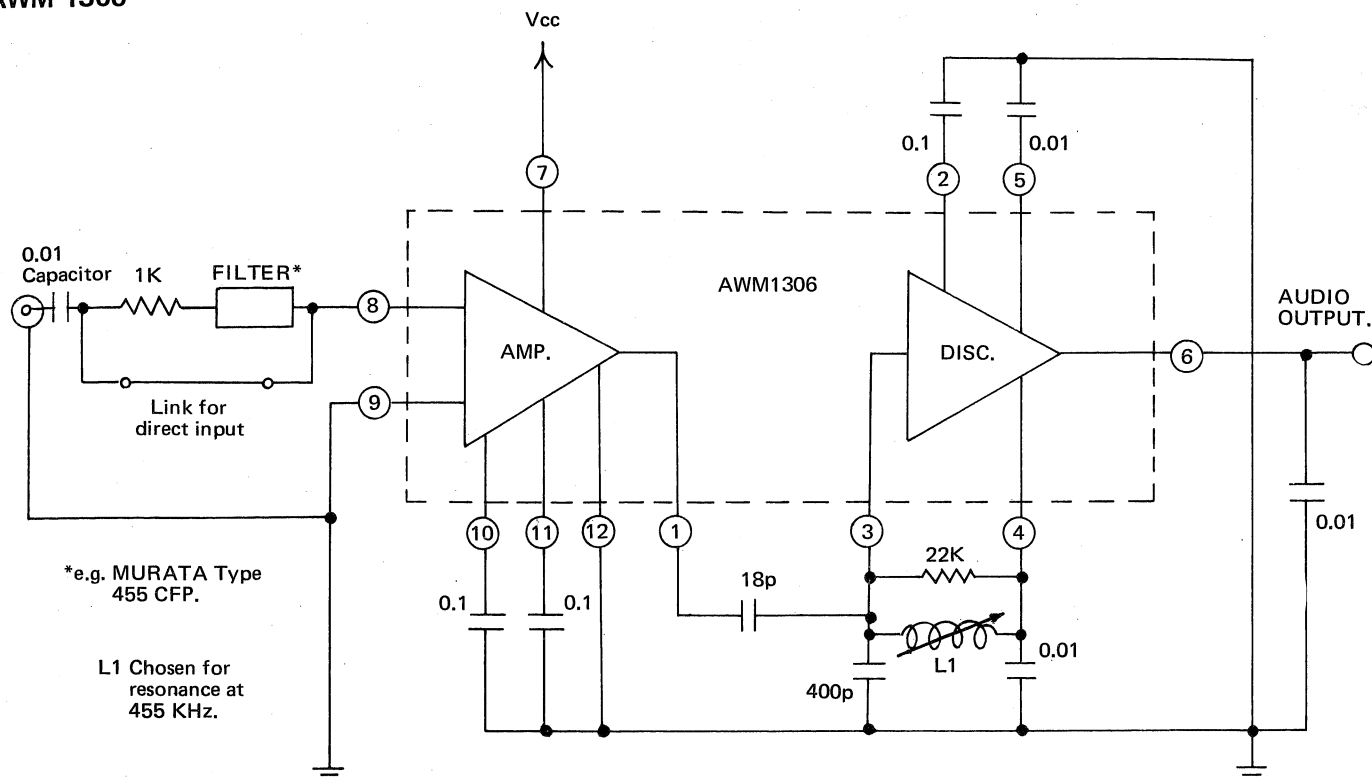


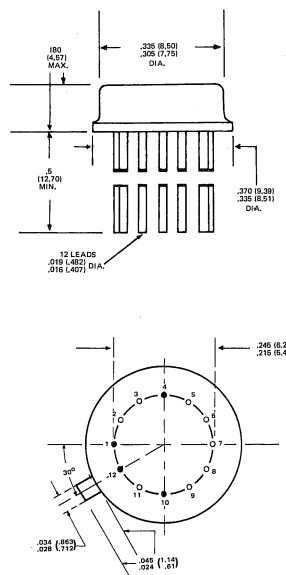
Figure 4. AWM1306 Amplifier and Detector Test Set Up Circuit.

TYPICAL PERFORMANCE FOR TEST CIRCUIT OF FIG. 4.

CENTRE FREQUENCY:	455 KHz.
DEVIATION (AT 1KHz.MOD):	± 5 KHz.
INPUT (PIN 8) FOR 10dB S/N:	$2 \mu\text{V rms.}$
INPUT (PIN 8) FOR LIMITING:	$35 \mu\text{V rms.}$
RECOVERED AUDIO (PIN 6):	130 mV rms.
AUDIO DISTORTION:	$\leq 3\%$.

PIN CONNECTIONS AND DIMENSIONAL OUTLINE

1. RF out
2. Base bypass 2
3. Discriminator input
4. Divider bypass
5. Audio out (+)
6. Audio out (-)
7. Positive supply
8. Input
9. Low level ground
10. Emitter bypass
11. Base bypass 1
12. High level ground



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